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Texting Older Sisters to Step: The TOSS Study

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Abstract

The purpose of our two-phase study was to develop acceptable text-messages to increase physical activity. Four focus groups (two for each phase) were conducted with older African American women who had access to texting-capable mobile phones and were in the contemplation stage for physical activity. Phase 1 participants ($n = 12$) mean age was 71 and ranged from 65 to 86 years. Content analysis was used to identify fundamental themes that were later used to develop text messages. Six categories emerged from the data and 31 text messages were developed based on focus group input and national recommendations. Phase 2 participants ($n = 9$) mean age was 67 and ranged from 65 to 75 years. Descriptive statistics revealed 100% of participants understood all messages. When messages were evaluated individually, a minimum of 78% felt each message motivated activity; and 67% said lengths were perfect. Findings identified messages that were relevant and potentially motivational to stimulate physical activity among this population.

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Keywords

Text-messages; physical activity; African American; older women; Transtheoretical Model

A National Institute on Aging priority is to develop successful and economical approaches to promote and maintain health and function among older adults (National Institute on Aging, n.d.) and engaging older adults in physical activity (PA) is one approach that meets National Institute on Aging's vision for health promotion. Physical inactivity continues to be a public health concern despite long-standing, national recommendations that older adults engage in moderate PA for at least 30 minutes a day on most days of the week (Centers for Disease Control and Prevention [CDC], 2014; U.S. Department of Health and Human Services [USDHHS], 2008).

Physical Activity Among Older African Americans

Across demographic groups, older individuals are underactive and older African Americans (AAs) are less likely than Caucasian Americans to engage in aerobic exercise. Moreover, resistance-based strengthening or balance exercises, which improve balance, mobility, flexibility, and functional independence (Taylor, 2014; U.S. Department of Health and Human Services, 2008) are also underutilized (CDC, 2014; USDHHS, 2008).

In 2015, only 12.7 % of adults 65 and older met the *Healthy People 2020* objectives for aerobic physical activity and muscle strengthening and 42.9% were classified as having no leisure-time PA (USDHHS, 2014). The positive health benefits that accompany participation in regular PA across the lifespan are well-documented (USDHHS, 2008). Aerobic or muscle-strengthening PA may reduce the risk of many poor health outcomes among older adults, such as hypertension, diabetes, and obesity, which are disproportionally higher in AAs (CDC, 2014; Lemacks, Wells, Ilich, & Ralston, 2013). PA also reduces the prevalence of falls, decreased mobility, and functional limitations (USDHHS, 2008). Given the broad benefits of PA, increasing this health behavior in older adults is vital to enhancing their quality of life.

Theoretical Framework

Even with the complexity of initiating and maintaining long-term behavior change, theoretically based interventions hold the most promise in directing and grounding interventions among older AA women. One theory, the Transtheoretical (Stages of Change) Model (TTM), has been widely and successfully used to increase PA across sociodemographic and ethnic groups. This model posits that people move through five stages: precontemplation (not ready), contemplation (getting prepared), preparation (ready), action, and maintenance (LaMorte, 2016; "The Transtheoretical Model," 2016; Yang et al., 2015) when adopting a new behavior. Motivating older AA women to move from the contemplation stage (getting ready to initiate PA within six months) to the preparation (ready to change in the next month) and/or action (overtly changing behavior) stages of the TTM ("The Transtheoretical Model," 2016) will likely require multifaceted approaches to reduce physical inactivity trends (Taylor, 2014) and regression to previous stages. In other

words, as a person progresses through these stages: cognitive, affective, evaluative, experiential, and behavioral processes, which encompass decisional balance (pros and cons to making a change) and self-efficacy (degree of self-confidence to achieve behavior change) must be considered (LaMorte, 2016). Research suggests that identifying and using multidimensional strategies that encompasses PA preferences, barriers, and self-identified motivational methods will increase the likelihood of people achieving and maintaining a regular PA regime (Gothe & Kendall, 2016; Mostafavi, Ghofranipour, Feizi, & Pirzadeh, 2015; van Schijndel-Speet, Evenhuis, van Wijck, van Empelen, & Echteld, 2014).

Text-messaging and Older African American Women

Using technology, such as text messaging as a motivational method, is a promising strategy to supplement existing approaches to modify life style behaviors. In fact, the use of mobile technology among older adults has increased over the past 10 years, and this form of information and communication translates easily into everyday usage (Elliot, Mooney, Douthit, & Lynch, 2014). Moreover, 98% of AAs are users of mobile phone technology, and adults aged 65 and older account for 85% of users (Pew Research Center, 2017). Research has shown that text messaging is an accessible and feasible method to improve health behaviors such as walking for physical activity (Kim & Glanz, 2013) and disease management or health behavior changes (Free et al., 2013). With the increased growth of mobile phone usage, especially among African Americans, text messaging or mobile health communication “mHealth” (Shaw, Bosworth, Silva, et al., 2013) offers a promising strategy to improve health behaviors, particularly PA (Martin et al., 2015), remove traditional barriers to health information, and improve health outcomes.

Results of PA interventions using text-messaging point to optimistic outcomes (Antoine Parker & Ellis, 2016; Buchholz, Wilbur, Ingram, & Fogg, 2013; Hall, Cole-Lewis, & Bernhardt, 2015; McCoy et al., 2017; Stephens & Allen, 2013), but few studies have primarily focused on using text messaging to increase PA among older AAs (Kim & Glanz, 2013) and specifically in older AA women who report rates of PA that are among the lowest of all US race-gender subgroups (Duru, Sarkisian, Leng, & Mangione, 2010). Moreover, a lack of specificity and understanding related to the construction of text-messages that effectively promote and encourage PA among older AA women exists (Buchholz, Wilbur, et al., 2013; Müller, Khoo, & Morris, 2016; Reese et al., 2016). Recipients of these interventions traditionally have had limited involvement in the text-message development process. This is an opportunity to avoid the development of ineffective text-messages (National Cancer Institute, 2009).

Purpose

The purpose of our study was to develop a PA promotion text-message library within the TOSS (Texting Older Sisters to Step) study. Based on focus group feedback and nationally published PA materials, we developed these messages to motivate older AA women to increase their PA levels and evaluated the messages for acceptability.

Methods

Study Protocol

The two-phase study had two focus groups in each phase. We aimed to recruit 6–8 interested and eligible women for both phases (see Table 1). In phase 1, women provided feedback on the type of language (positive, emotional, humorous, or threat) that should be included in acceptable text messages for the targeted audience. In phase 2, women received the text messages and provided feedback separately for each message regarding message clarity, level of liking/disliking each message, and if each message was perceived to be motivational to encourage PA.

Setting and Participants

After receiving approval from the University of Alabama in Birmingham Intuitional Review Board, we recruited participants from two predominately AA churches located in Jefferson County, Alabama and these participants recruited others by word of mouth. Inclusion criteria included: (1) being an AA woman, (2) age 65 years and older, (3) access to a mobile phone that had texting capability, (4) the ability to read text messages and (5) meeting the screening criteria which indicated that they were in the TTM (Stages of Change) Model contemplation stage of behavior change (planning to increase PA levels within the next six months) ("The Transtheoretical Model," 2016). Obtaining input related to PA preferences, facilitators and barriers from women in the contemplation stages may increase the likelihood of developing PA text messages that would be more relevant and acceptable to women contemplating increasing their PA levels (Schijndel-Speet et al., 2014).

Sample size in qualitative research is mostly related to the purpose of the study, the research questions, the richness of the data obtained from the participants, the information needed, and the sampling strategy used. Our sample size for each focus group is consistent with evidenced based literature and included women who were well spoken, knowledgeable, and articulate (Krueger & Casey, 2009; Sebastião, Chodzko-Zajko, & Schwingel, 2015). We conducted all four focus group sessions at one of the recruitment churches.

Message Design Process

The research team followed the five strategies of *The Making Health Communication Programs Work Planner's Guide* (National Cancer Institute, 2009) to develop and pretest messages. First, the team reviewed existing materials related to PA promotion such as from healthfinders.gov, 2008 PA guidelines, and the National Institutes of Health, the CDC to determine if information was appropriate to assess and promote PA among older adults (CDC, 2014; National Cancer Institute, 2009; USDHHS, 2008). After examining published PA promotion materials, the team selected potential text-message concepts (positive, emotional, factual, humorous, threat, auditory, inspirational, encouraging, or reminders). The objective was to obtain feedback from the focus groups to determine the type of language and message appeals that may work best for older AA women. Data collected from phase 1 determined what information to use to develop the text messages. Phase 2 of the study pretested the messages.

Data Collection

The four focus groups were facilitated by a trained moderator, digitally recorded, and lasted between 60 to 90 minutes. Phase 1 and Phase 2 were each conducted over a two-month period and there were four-months in between the two phases. After participants provided written consent, they completed a brief sociodemographic and current PA levels survey as well as the Rapid Assessment of Physical Activity (The Health Promotion Research Center, 2006). The Rapid Assessment of Physical Activity aerobic scores range from 0 (I rarely or never do any physical activities) to 7 (I do 20 minutes or more a day of vigorous physical activities, 3 or more days a week).

Phase 1: Design—A semi-structured interview guide was used and included nine open-ended questions that assessed the experiential and behavioral processes of the participant's views related to PA (level, facilitators, and barriers of PA) and the use of text messaging (facilitators, barriers, types) for health communication.

Phase 2: Intervention—Participants met twice over a 2-week period, once for the orientation session before the intervention and once following the intervention for the focus group session where they would provide feedback. During the orientation session, participants' were provided details about the 2-week intervention, sent sample text messages to ensure they were able to receive and read messages, and given a paper log to record feedback on each of the intervention text messages. For the 2-week intervention, participants received one daily text message for 13 days. At the end of the 2-week intervention, participants' attended a focus group session to discuss what factors and types of text messages would motivate or inhibit them from engaging in PA. Specifically, questions used to assess each text message included: 1) What time of day did you reviewed the text message? 2) Did you understand the text message? 3) Did you like how the text message looked? Would this text message motivate you to increase your physical activity or exercise? 4) Was the text message too long, too short or just right? 5) What would make the text message better?

Analysis

For phase 1, focus group sessions were digitally recorded, transcribed verbatim, and checked for accuracy. Initially, the first author used Colaizzi's seven step method (see Table 2) to identify fundamental themes and analyze the transcripts (Colaizzi, 1978) as follows: 1) read the transcripts, 2) reviewed each transcript line-by-line to extract 268 significant statements, 3) formulated meanings from each of the 268 significant statements (i.e., articulated the "real" meaning of each significant statement), 4) organized and reduced the formulated meanings into 12 themes. For steps 5 and 6, the first and fifth authors further reduced the 12 themes to six categories, and reviewed the types of text-messages the participants stated they would want to receive and revisited the major clusters identified to determine if any overlooked connotations. The team reduced the exhaustive description of PA information into 31 essential text messages based on data that emerged from prior steps (Sanders, 2003) and the messaging formats identified by the focus groups (e.g. auditory/humorous [Talking Tom Cat], inspirational [Bible scripture], encouraging [avatar]. More details under the message development section).

For phase 2, step 7 of Coliazzi's method was used to analyze the focus group sessions, which requires the research team to return to the participants to verify accuracy of the data analysis and to confirm the study's findings (Colaizzi, 1978). Specifically, to validate whether the text messages represented the essence of the participants in phase 1, we recruited some of the women from the first two focus groups in phase 1 to participate in phase 2 of the study (Sanders, 2003).

Results

Phase 1: Design

Characteristics of the sample—Phase 1 participants ($n = 12$) had a mean age of 71 years with a range of 65–86. The average RAPA aerobic score was 3.33 which corresponds to "I do some light physical activity every week", and no women were categorized as physically active (Rapid Assessment of Physical Activity aerobic scores of 6 or 7). Nine of the 12 (75%) phase 1 participants had at least a high school education and 3/12 (25%) were married.

Message Development—We extracted 268 significant statements and formulated meanings. We organized and reduced the formulated meanings into 12 themes, which were further reduced to six categories because of significant overlap. The team meet as a group and created messages based on the six categories that emerged from the data and the published PA materials to promote and educate older adults about PA. Overall, 31 text-messages were developed that the team agreed were understandable, acceptable, and appropriate for the targeted population. Using Microsoft Word, we ensured that the text-messages were written in plain, simple language and at a reading grade level of 5.9. Using an excel spreadsheet; each text-message consisted of l60 characters or less. Because humor, imagery, and auditory text-messages were preferred styles, we used the app "Talking Tom Cat" to deliver some of the messages as text-message attachments. This app was free of charge and could be downloaded to most mobile phones. The first author also created an avatar, which is a graphical image that represents herself. See figure 1 for text message examples.

Major Message Concepts—Six categories emerged from the phase 1 focus group data analysis: 1) facilitators for PA, 2) PA/exercise benefits, 3) perceptions related to PA, 4) sedentary/inactivity, 5) barriers to PA, and 6) preferred format for text-messages. According to the TTM, all of these categories are closely aligned with the experiential and behavioral processes of the TTM, which involves increasing the participant's awareness of PA, the consequences of inactivity, and solutions to barriers of PA participation (LaMorte, 2016). The research team used these six categories to develop 31 text-messages based on national recommendations that were factual, encouraging, inspirational, a reminder and a combination of these were presented as visual or animate for the study.

Category 1: Facilitators for PA: Although the participants in this study were screened and self-identified as being in the contemplation stage for engaging in PA, the majority of the women verbalized health benefits associated with participating in regular PA. All of the

women agreed that regular PA was important to maintaining good mobility, managing chronic conditions, and relieving muscle stiffness and pain. They also acknowledged their desires for strategies that would encourage them to perform PA on a regular basis such as being accountable to a peer partner or healthcare providers as illustrated by the following quotes:

A participant shared what would motive her*: "I need a partner to motivate me cuz just like I told you, I said, no I don't feel like it today. If someone call me and say hey it's time to go".*

One woman talked about her how her healthcare provider could motivate her. *"To me, it'd be credible to me if it came from her. Because she has my numbers for my diabetes and my high blood pressure. I would take that very serious*".

Category 2: PA/ Exercise benefits: When the participants were asked to define PA, they used terms PA and exercise interchangeably. One participant said, *"It's movement, movement of the body, every day".*

Another woman said, *"Well, I agree, exercise, every day, really"* and a third woman stated, *"Any movement is physical activity".* As the conversational exchanges continued on this topic, the women were nodding in agreement and the conversation shifted to the benefits of performing PA.

"Walking…. [is a] *health effective for the body….it's a necessity. Let me put it that way".* To illustrate, a fourth woman said, *"Me, I'm a diabetic, and I'm supposed to walk, as a part of my daily routine, to do some type of exercise. Food, medicine, and exercise is very important to me".*

Another comment shared was "*I figured out, if you don't move, my muscles tighten up on me".*

Category 3: Perceptions related to PA: Some of the women describe their opinions as to reasons older women may or may not participate in regular PA. One participant said,

"I believe it is a mind thing….when you get in your mind that your exercise, walking or whatever you do is important…. [you schedule it like an] *appointment"*.

One woman said, "*a lot of times we think exercise is boring…you do the same thing and then …you just start to count down the minutes that you can quit"*.

An additional woman added, *"I realize I've got to do something better about my health and be more active. I was gonna do [play] tennis until I decided that my legs was too small and my stomach was too big to put into a tennis suit….I said [I] look like Olive Oyl that got fat in her old age".*

Category 4: Sedentary/ inactivity: All of the participants verbalized the importance of decreasing sedentary behaviors despite their current low PA levels. One participant shared,

"*I am sedentary. Not that I don't have good intentions because every time I think, oh, yeah, I'm gonna walk next week, when next week get here, I'm thinking, nah, I don't feel like it today"*.

Another woman stated how retirement has contributed to her sedentary behavior, "*I wanna say that I have noticed a different in my body cuz I retired a year ago, too. I used to be in security, so we kept moving, walking. If we weren't walking, we was driving, just moving around, but now that I'm out of security, and I've been just sitting around, I could feel the different in my body. I am stiffening up some…One thing it does, I notice, is it sorta makes you get a little thicker, right around* [waist area]*"*

Category 5: Barriers to PA: When the participants were asked, "What hinders you or what stops you from walking or exercising?" the responses ranged from internal barriers (i.e. pain, motivation) to external barriers (e.g. environmental, time). Some comments that represented internal barriers for the women included *"Just being lazy" or "Looking at my bed…I wanna just lay there on my bed"*. The majority of the barriers identified were related to external factors. One participant stated, "*The TV is my friend*".

A second participant voiced, "*My problem is finding the time*". Another woman expressed that the lack of accountability to others was a barrier for her. *"Well, my girlfriends and I used to go line dancing, which is a form of exercise. It was fun. It was relaxing. I really enjoyed that. We all just stopped at the same time. They would call and say, "You going tonight?" I said no, and I'm not either."*

Category 6: Preferred format for text-messages: When the participants were asked, "What kinds, types or format of text-messages you would like to receive", the answers were mixed. One of the first responses to this question was, *"Funny with me. Maybe a picture"*.

Another participant stated, *"I would rather have something that's on the light side. Because if you tell me I need to get up, that's not the motivating thing to tell me I need to get up…I want you to tell me this is the day*…[that's] *gonna make a difference. Let's start shaking. Something like that. Something that's funny enough to make me say okay, I'm gonna shake"*.

A different woman said. *"It'll help* [if the text message] *keep beeping and worrying me. The "beep, beep, beep, beep, beep," it won't stop"*. Another response was *"Okay, you gotta walk today in order to make these steps or this goal you might get…something. Someone say, "Congratulations, you've done it."*

One participant provided a step approach to receiving text messages. *"I think the first message that would probably help me is, "Have you set a goal?...Once the goal is set, then another set of message just says, "How are you achieving it? How close are you to it? Did you walk today?" cuz you need that, like she was saying. You need so many steps in order to meet the goal you set. Just a reinforcement and some accountability."*

Additional comments were related to the types (humorous, comical, imagery) frequency (1–5 times a week but only once a day) and time (in the morning time between 6:30AM–9:00AM) of the text messages.

Phase 2: Intervention

Characteristics of the sample—Phase 2 participants ($n = 9$) had a mean age of 67 years with a range of 65–75. The average RAPA aerobic score was 4.67, which corresponds to "I do moderate physical activities every week, but less than 30 minutes a day or 5 days a week" and 4 women (44.44%) were categorized as physically active. Eight of the nine (88.89%) phase 2 participants had at least a high school education and 4/9 (44.44%) were currently married. Four of the women from phase 1 participated in phase2.

Message Assessment—Descriptive statistics revealed 100% of participants understood all 13 messages they received. When messages were assessed individually, a minimum of 7 out of 9 participants (78%) felt each message motivated activity and 78% liked the aesthetics of each message (see Table 3 for text messages and percentages). A minimum of 6 out of 9 participants (67%) said message lengths were perfect for each message. Only half of the participants who received message 6a (2 out of 4) thought the length was appropriate. This may have been due to participants not liking the message. Consequently, 80% of the remaining participants (4 out of 5) who received message 6b that was similar in length, thought the length of the message was appropriate. See all 13 messages in Table 3.

Discussion

The objective of the present study was to develop a PA promotion text-message library named TOSS (Texting Older Sisters to Step) based on feedback from the targeted population and nationally published PA materials in an effort to encourage older AA women to increase their PA levels. Participants in our study, who were contemplating a behavior change (to be more physically active), reported that the text messages were acceptable and motivational in encouraging PA. Although the study was not designed to measure actual increases or changes in PA levels, several of the women self-reported increases in their PA levels.

The findings from our study may lead to the development and use of culturally appropriate mHealth technology interventions to promote regular PA among AA older women. For example, we learned that these participants did not want to be "told or ordered" to engage in PA or change behavior. However, when we used the Talking Tom app to give the participants a command (see text messages 7, 11, & 12 in Table 3), almost 90% of the women indicated that the message was motivational. All of the women expressed that receiving the text messages every morning would be sufficient to prompt PA. One participant said that if she received messages more than once a day, she would start ignoring them. Similarly, Shaw and colleagues found that their participants wanted one text message, less than 140 characters, delivered daily around 8:00 AM to encourage sustained weight loss (Shaw, Bosworth, Hess, et al., 2013).

Our findings were consistent with results reported by Gerber and colleagues who found text messaging to be a feasible and acceptable way to promote PA among AA women (Gerber,

Stolley, Thompson, Sharp, & Fitzgibbon, 2009). In their study, they sent 4500 text messages to 95 AA women (aged 30 to 65) to either motivate or remind women to maintain their weight loss. The participants either created personal messages or received general health messages to encourage themselves to maintain weight loss. On average, the women reported that this would be a feasible method of motivating them to engage in healthy life style behaviors such as exercise. Similarly, Kim and Glanz found that after 6-weeks, older AAs who received motivational PA text-messages three times a week, had an increase in step counts and self-reported physical activity (Kim & Glanz, 2013).

The TOSS study used focus groups to help develop text messages that were culturally relevant to older AA to promote PA. Likewise, Buchholz and colleagues used focus groups to determine acceptability and develop text messages to promote walking. Their findings suggest that text messaging to promote walking was acceptable as long as the frequency, the time of day, and the content of the messages were tailored to the targeted audience (Buchholz, Ingram, Wilbur, & Pelt, 2013). In addition, Morton and colleagues developed text messages based on published evidence, behavior change theory, experiences, and feedback from their targeted population (people at high risk for diabetes) and found that using text messaging along with self-monitoring was a feasible and acceptable approach (Morton et al., 2015) to manage diabetes. Even though the content of our text messages were different from the text message content of these similar studies, all of the studies found favorable results when using text messages that were developed with input from the targeted participants.

The TOSS study also emphasizes the expansion of our understanding of how mHealth may be a strategy to facilitate positive behavior changes, such as a method to promote PA among older adults. For example, participants in our study and other investigations were knowledgeable of the benefits associated with regular PA, but their knowledge did not translate into behavior (Bowen, Eaves, Vance, & Moneyham, 2015; Robinson & Wicks, 2012). Using mHealth text messages may be a promising strategy to prompt regular PA in older AA women. Our results were consistent with older AA women in another study that described the importance of engaging in regular PA in order to improve health and maintain independence but did not exercise for various reasons such as a lack of motivation, lack of social support, and pain (Bowen et al., 2015).

Many of the women who received the text messages stated that they were more aware of their sedentary behavior and would begin to move. One participant in phase 2 said, *"My grandson said grandma, what are you doing? I told him I was exercising".* Another study had similar results where increased awareness of sedentary behaviors among older adults motivated the participants to reduce their sitting time (Greenwood-Hickman, Renz, & Rosenberg, 2016). Using text messages to send mHealth promotion information that is understandable, clear, and easily accessible may provide another approach to promote PA of large groups of people inexpensively (Merck, 2017; Shaw, Bosworth, Silva, et al., 2013). With the popularity of mobile technology, the increase prevalence of chronic conditions, and rising healthcare costs, healthcare providers need simple, low-costs and effective strategies to promote healthy lifestyle behaviors (Free et al., 2013). Because of the favorable responses we received from the women in our study, further research is warranted to assess the

effectiveness of mHealth communication, specifically text messaging, to modify and sustain PA levels among this group.

A few limitations of this study should be noted. The primary limitation is that we did not objectively measure PA levels after the intervention. Secondly, we only conducted two focus groups during both phases of the study. Therefore, we do not know if more themes would have emerged if additional focus groups were conducted, more participants were recruited, or if we fully reached data saturation. Third, fewer women participated in phase 2 of the intervention. Fourth, we implemented the intervention for only 2 weeks. We do not know if the feedback from the participants would have been less favorable if they received the text messages for a longer period. Fifth, we noticed during the orientation sessions, a few of the women expressed some confusion about how the RAPA form was worded. This may account for some of the women being classified as actively engaging in PA, even though all of the women were screened and classified as contemplators. Lastly, this study was tailored primarily to older, faith-based AA women, which limits generalizability.

Our study has some noteworthy strengths. We provided step-by-step instructions of how we developed a PA text message intervention (Buchholz, Wilbur, et al., 2013) specifically for older AA women (Collins et al., 2014; Kim & Glanz, 2013). Although our sample size was small, we were able to develop text messages with feedback from the women that were reported to be acceptable and motivational to encourage increases PA levels. This is the first formative study to our knowledge that uses feedback from older AA women to assist in the development of PA text messages. The focus group sessions also informed the research team of the women's preferences related to the content and type of PA text messages they wanted to receive. By recruiting participants from phase 1 (message development), to participate in phase 2 (message assessment), we were able to determine whether the message concepts were effectively translated into text messages accurately. However, future studies could replicate this study to verify our findings.

In summary, text messaging is a promising, low-cost strategy that can reach large numbers of community dwelling, older AA women. Feedback from the women emphasized the importance of identifying group preference related to PA text messaging content in an attempt to meet the groups' unique needs. This study contributes to the growing body of literature concerning the use of mobile technology to improve PA in older AA women. Results suggest that mobile technology is an acceptable and feasible strategy among this population. Additionally, these findings may have implications for the design of a larger mobile technology intervention for community-dwelling older AA women who are not recruited from churches. Findings of this study also suggest that multimedia PA text messages, which are developed based on feedback from older AA women, may motivate this group to increase PA levels and decrease sedentary lifestyle behaviors. These findings may also be used in the future to assist in the development of a larger PA text message database for older AA women, and more generally, mobile technology interventions for all older AA adults to increase PA levels. However, due to the limitations of this study, more research must be done to elucidate techniques that will improve PA in all older adults, not just in older AA women from churches. Future studies must address generalizability with respect to

non-faith based participants or the ratio of humor to factual messages that may optimize motivation to engage in regular PA.

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Figure 1.
Examples of Text Messages

Table 1

Enrollment Results

Phase 1		
Focus Group 1		
	14	Women expressed interest in study
	8	Participants eligible and enrolled
	1	Less than 65 years old
	5	Already Active
Focus Group 2		
	7	Women expressed interest in study
	4	Participants eligible and enrolled
	2	No show
	1	Cancelled due to personal conflict
Phase 1 total	12	Completed phase 1
Phase 2		
Focus Group 3		
	11	Women expressed interest in study
	4	Participants eligible and enrolled
	1	Less than 65 years old
	1	Already Active
	4	Cancelled due to personal conflict (family responsibilities/out of town)
	1	No show
Focus Group 4		
	7	Women expressed interest in study
	5	Participants eligible and enrolled
	1	Cancelled due to personal conflict
	1	No show
Phase 2 total	9	Completed phase 2 [Note: 4 of these 9 women were recruited from women in Phase 1]

Table 2

Colaizzi Seven Step Method

Steps	Description of Steps	Process used
1	Read transcripts to “gain a sense for them.”	Listening and reading the focus group transcripts allowed for data immersion, which was necessary for describing PA concepts.
2	“Extract significant statements” from each transcript	Reading transcripts several times to select 268 significant statements related to PA.
3	Formulate meanings	Examining each significant statement to determine the genuine meaning (268 formulated meanings related to PA).
4	Organize the cumulative formulated meanings into common themes.	Combining formulated meanings into 12 mutual theme clusters with parallel views across transcripts.
5	Provide a thorough description of acceptable PA content	Organizing the clusters (further reduced from 12 to 6) into a broad picture to describe group perception of acceptable PA content for messages.
6	Revisit the overall picture of PA content in a new light and identify unnoticed meanings.	Reviewing the major clusters to detect meanings that the groups may have overlooked, 31 text messages were developed based on group feedback, published PA literature, and clinical expertise.
7	Request participants to confirm accuracy of PA content for messages.	Validating the PA content with participants recruited for phase 2 and some from phase 1

Note. Adapted from: Bowen et al.(2015), Colaizzi (1978, p. 59), Sanders (2003). Performed peer debriefing at each step with experienced researchers to ensure credibility

Table 3

Text messages and acceptability (phase 2, $n = 9$)

Text Messages	Understand	Looks	Motivate	Length
1. Avatar: Healthy physical activity habits can start at any time during your life and can lead to better overall health! Make time for 30 minutes, 5 days a week	9 (100%)	8 (88.89%)	8 (88.89%)	8 (88.89%)
2. QC: Make a commitment to yourself that you will turn “sit” time into “fit” time this week and move around as much as possible while at home.	9 (100%)	9 (100%)	7 (77.78%)	9 (100%)
3. Tom: “Hi there. This is talking Tom. Think of PA as you would a medication. You take medication every day, you should do PA everyday”.	9 (100%)	7 (77.78%)	8 (88.89%)	9 (100%)
4. Avatar: Worried about falling? Focus on exercises that can improve balance, such as backward, sideways, heel, or toe walking and standing from a sitting position.	9 (100%)	8 (88.89%)	7 (77.78%)	8 (88.89%)
5. QC: I can do everything through Christ who strengthens me. Philippians 4:13	9 (100%)	9 (100%)	9 (100%)	8 (88.89%)
6a. Avatar: Exercising is a blessing, not a chore. Workout and be grateful that you physically can.	4 (100%)	4 (100%)	4 (100%)	2 (50%)
6b. Avatar: Keeping strong muscles is important to prevent chronic health issues and injuries from falls. Try muscle-strengthening exercises, such as free weights or yoga.	5 (100%)	5 (100%)	4 (80%)	4 (80%)
7. Tom: Did you know that muscles that are not used daily will stop working effectively. Use it or lose it! Get up off of the couch! Move today!	9 (100%)	7 (77.78%)	9 (100%)	7 (77.78%)
8. Avatar: Good idea: Instead of watching TV, try one of these ideas: 1) walking, 2) dancing, or 3) working in the yard as a way to increase your physical activity.	9 (100%)	9 (100%)	9 (100%)	8 (88.89%)
9. Avatar: Remember the gym is not a necessity to be physically active. If you don’t feel like going to the gym, try going for a short brisk walk instead, perhaps just before or after dinner.	9 (100%)	9 (100%)	7 (77.78%)	8 (88.89%)
10. QC: Just started being physically active? Remember to start slowly and increase your activity gradually over a period of weeks to months.	9 (100%)	8 (88.89%)	7 (77.78%)	8 (88.89%)
11. Tom: Hey there. Age is just a number but you can get fit just like Ernestine Shepherd- the 2011 World’s Oldest Female Bodybuilder. She was 74 years old. So what is your excuse? Get up and move!	9 (100%)	7 (77.78%)	8 (88.89%)	8 (88.89%)
12. Tom. Hey there you on the couch. Stop being a couch potato! Stand up and move around while you are watching your favorite television program.	9 (100%)	8 (88.89%)	8 (88.89%)	7 (77.78%)
13. QC: Don’t you know that your body is a temple that belongs to the Holy Spirit? The Holy Spirit, whom you received from God, lives in you. You don’t belong to yourselves. You were bought with a price. So bring glory to God in the way you use your body. 1Cor 6:19–20.	9 (100%)	9 (100%)	9 (100%)	8 (88.89%)

Note. PA = physical activity; QC=quotation creator